

WHAT IS CLAIMED IS:

1. A self-cleaning fluid dispenser, comprising:

5 a. a housing defining an internal chamber bounded by an interior surface within said housing, said housing comprising:

(1) an inlet for receiving a fluid product into said housing and being in fluid communication with said internal chamber, and

10 (2) a discharge port through which fluid product may exit said housing, said discharge port being in fluid communication with said internal chamber;

b. a valving rod disposed in said housing and being movable within said internal chamber between an open position, in which fluid product may flow through said internal chamber and exit said housing via said discharge port, and a closed position, in which fluid product is
—15 substantially prevented from flowing through said internal chamber, said valving rod comprising:

(1) a central bore,

(2) at least one inlet for receiving a cleaning fluid, said inlet being in fluid communication with said bore, and

20 (3) one or more outlet ports in fluid communication with said bore, said outlet ports being capable of directing cleaning fluid radially outwards from said bore and against one or more select portions of the interior surface bounding said internal chamber in order to facilitate the removal of at least a portion of any fluid
25 product or derivatives thereof that may be in adherence with said interior surface; and

c. a delivery system adapted to supply a cleaning fluid comprising a solvent and a gas to said valving rod inlet.

2. The fluid dispenser of claim 1, wherein said delivery system supplies the cleaning fluid to said valving rod at a pressure ranging from about 0.5 to about 10 psi.

5 3. The fluid dispenser of claim 2, wherein said delivery system further includes

means for detecting the pressure within said delivery system; and
means for controlling said delivery system based at least in part on
the detected pressure.

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4. The fluid dispenser of claim 1, wherein said delivery system includes means for mixing the solvent and gas together.

5. The fluid dispenser of claim 4, wherein said delivery system
-15 disperses the solvent as a suspension in the gas.

6. The fluid dispenser of claim 4, wherein the solvent and gas are mixed at a gas:solvent ratio ranging from about 50:1 to about 400:1.

20 7. The fluid dispenser of claim 1, wherein
said discharge port has an interior surface that defines part of said
internal chamber of said housing; and
said valving rod is adapted to direct cleaning fluid against said
interior surface of said discharge port when said valving rod is in said
25 closed position.

8. The fluid dispenser of claim 1, wherein said housing further comprises an internal reservoir in which solvent may be contained, said

internal reservoir being in fluid communication with said at least one inlet into said central bore of said valving rod.

9. The fluid dispenser of claim 8, wherein at least a portion of said
5 valving rod is movable through said internal reservoir.

10. The fluid dispenser of claim 8, wherein
said housing has at least one inlet in fluid communication with said
internal reservoir; and
10 said delivery system supplies cleaning fluid to said internal reservoir
via said at least one inlet in said housing.

11. An apparatus for dispensing fluid into flexible containers,
comprising:
15 a. a mechanism that conveys a web of film along a
predetermined path of travel, said film web comprising two juxtaposed
plies of plastic film that define one or more partially-formed flexible
containers;
b. a dispenser through which a fluid product may flow in
20 predetermined amounts, said dispenser positioned adjacent the travel
path of the film web such that said dispenser can dispense fluid product
into the containers, said dispenser comprising:
(1) a housing defining an internal chamber bounded by an
interior surface within said housing, said housing comprising:
25 (a) an inlet for receiving a fluid product into said
housing and being in fluid communication with said internal
chamber, and

(b) a discharge port through which fluid product may exit said housing, said discharge port being in fluid communication with said internal chamber;

(2) a valving rod disposed in said housing and being movable within said internal chamber between an open position, in which fluid product may flow through said internal chamber and exit said housing via said discharge port, and a closed position, in which fluid product is substantially prevented from flowing through said internal chamber, said valving rod comprising

(a) a central bore,

(b) at least one inlet for receiving a cleaning fluid, said inlet being in fluid communication with said bore, and

(c) one or more outlet ports in fluid communication with said bore, said outlet ports being capable of directing cleaning fluid radially outwards from said bore and against one or more select portions of the interior surface bounding said internal chamber to facilitate the removal of at least a portion of any fluid product or derivatives thereof that may be in adherence with said interior surface; and

(3) a delivery system adapted to supply a cleaning fluid comprising a solvent and a gas to said valving rod inlet;

and

c. a device for sealing the plies of plastic film together to enclose the fluid product within the containers.

12. The apparatus of claim 11, wherein said delivery system supplies the cleaning fluid to said valving rod at a pressure ranging from about 0.5 to about 10 psi.

13. The apparatus of claim 12, wherein said delivery system further includes

5 means for detecting the pressure within said delivery system; and
means for controlling said delivery system based at least in part on
the detected pressure.

14. The apparatus of claim 11, wherein said delivery system includes
means for mixing the solvent and gas together.

10 15. The apparatus of claim 14, wherein said delivery system disperses
the solvent as a suspension in the gas.

16. The apparatus of claim 14, wherein the solvent and gas are mixed at
a gas:solvent ratio ranging from about 50:1 to about 400:1.

15 17. The apparatus of claim 11, wherein
said discharge port of said dispenser has an interior surface that
defines part of said internal chamber of said housing; and
said valving rod is adapted to direct cleaning fluid against said
20 interior surface of said discharge port when said valving rod is in said
closed position.

18. The apparatus of claim 11, wherein said housing of said dispenser
further comprises an internal reservoir in which solvent may be contained,
25 said internal reservoir being in fluid communication with said at least one
inlet into said central bore of said valving rod.

19. The apparatus of claim 18, wherein at least a portion of said valving
rod is movable through said internal reservoir.

20. The apparatus of claim 18, wherein

said housing of said dispenser has at least one inlet in fluid communication with said internal reservoir; and

5 said delivery system supplies cleaning fluid to said internal reservoir via said at least one inlet in said housing.

21. The apparatus of claim 11, wherein:

10 said housing inlet in fluid communication with said internal chamber comprises a first inlet in fluid communication with a first fluid product comprising one or more polyols;

 said housing comprises a second inlet in fluid communication with said internal chamber and with a second fluid product comprising one or more isocyanates; and

15 when said valving-rod is in said open position, the polyols and isocyanates are mixed in said internal chamber and dispensed into the partially-formed flexible container.

22. The apparatus of claim 21, wherein said solvent is selected from
20 glycols, ethers, and mixtures of glycols and ethers.